

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PA	PAGES
9269	5	71-9269	USA/9269/B(U)-96	1	OF 3

## 2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

## 3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

- a. ISSUED TO (*Name and Address*)
- b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

QSA Global, Inc.  
40 North Avenue  
Burlington, MA 01803

AEA Technology/QSA Inc., application dated  
July 23, 1999, as supplemented.

## 4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

## 5.

## (a) Packaging

(1) Model No.: 650L

(2) Description

A welded stainless steel encased, uranium shielded, Iridium-192 or Selenium-75 source changer. Primary components consist of a steel or stainless steel housing, internal supports, depleted uranium shield, and a titanium "U" tube. The tube is crimped in the middle of the "U" to provide a positive stop for the source assembly. Additionally, the Model No. 650L has two source locking assemblies mounted on the top cover plate. These assemblies are used to secure the radioactive source in a shielded position during transport. The unit resembles a rectangular box approximately 10-inches long, 13.25-inches high and 8.25-inches wide. The maximum weight of the package is 90 pounds.

(3) Drawings

The packaging is constructed in accordance with the AEA Technology/QSA Inc., Drawing No. R65006, Rev. H, Sheets 1-4.

## (b) Contents

(1) Type and form of material

Iridium-192 as sealed sources which meet the requirements of special form radioactive material.

Selenium-75 as sealed sources which meet the requirements of special form radioactive material.

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5. (b) Contents (continued)

(2) Maximum quantity of material per package

Ir-192: 240 curies (8.9 TBq) (output)

Se-75: 300 curies (11.1 TBq) (output)

Output curies are determined by measuring the source output at 1 meter and expressing its activity in curies derived from the following: 0.48 R/h-Ci Iridium-192 at 1 meter (Ref: American National Standard N432-1980, "Radiological Safety for the Design and Construction of Apparatus for Gamma Radiography") and 0.2 R/h-Ci Selenium-75 at 1 meter (Ref: U.S. Public Health Service, Bureau of Radiological Health, 1970. Radiological Health Handbook, rev. ed, Rockville, MD).

6. The source shall be secured in the shielded position of the packaging by the source assembly. The source assembly must be fabricated of materials capable of resisting a 1475°F fire environment for one-half hour and maintaining its positioning function. The cable of the source assembly must engage the source hold-down assembly. The flexible cable of the source assembly must be of sufficient length and diameter to provide positive positioning of the source at the crimp of the "U" tube.
7. The nameplates shall be fabricated of materials capable of resisting the fire test of 10 CFR Part 71 and maintaining their legibility.
8. In addition to the requirements of Subpart G of 10 CFR Part 71:
  - (a) The package shall be prepared for shipment in accordance with the Operating Procedures of Chapter 7 of the application, and
  - (b) Each package must meet the Acceptance Tests and Maintenance Program of Chapter 8 of the application.
9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
10. Revision No. 4 of this certificate may be used until July 31, 2007.
11. Expiration date: November 30, 2010.

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REFERENCES

AEA Technology/QSA Inc. application dated July 23, 1999.

Supplements dated November 19, 1999, October 2 and October 31, 2000, July 8, 2005, and March 1, June 6, June 30 and July 14, 2006.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Christopher M. Regan, Acting Chief  
Spent Fuel Project Office  
Office of Nuclear Material Safety  
and Safeguards

Date: August 3, 2006



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

**SAFETY EVALUATION REPORT**

**Docket No. 71-9269**  
**QSA Global Inc.**  
**Model No. 650L Transport Package**  
**Revision No. 5**

**SUMMARY**

By application dated March 1, 2006, QSA Global, Inc. (QSA) requested that the Certificate of Compliance (CoC) No. 9269 for the Model No. 650L package be reviewed by the U.S. Nuclear Regulatory Commission (NRC) for consistency with the requirements of Title 10 Code of Federal Regulations (CFR) Part 71 as revised in a final rule effective October 1, 2004 (69 FR 3786) and for the addition of Selenium-75 (Se-75) to the package contents. In addition, QSA submitted an updated application package to follow guidance for format in NRC Regulatory Guide 7.9, Revision 2.

Based on the statements and representations in the application, as supplemented, and the staff's review and interpretation of the applicable requirements, the staff concludes the revision to the CoC meets the requirements of 10 CFR Part 71. Accordingly, the CoC has been updated to include the revisions requested in the application and as approved in this Safety Evaluation Report. The package identification number has been amended to include the "-96" designation, identifying that it meets the updated regulations as described in the package application.

**EVALUATION**

**Compliance With the Requirements of 10 CFR PART 71, FINAL RULE "-96" Update**  
10 CFR Part 71, "Packaging and Transportation of Radioactive Material" was updated for compatibility with the International Atomic Energy Agency standards (69 FR 3786) effective October 1, 2004. As a result of this update, transportation packages should be updated to meet the revised requirements. The new designation of "-96" has been requested for Model No. 650L to identify that it meets the requirements of the updated rule. The staff has reviewed the issues associated with the updated 10 CFR Part 71.

Of the 19 issues identified during the update, no issues pertain to this package. Therefore, the staff has determined that the package meets the requirements of the revised 10 CFR Part 71 and can be designated with a "-96" indicating compliance with the new regulations. The CoC has been updated with the new designation.

**Shielding Evaluation - Safety Analysis Report (SAR), Chapter 5.0**

The application proposed the addition of a 300 Curie (Ci) Selenium-75 (Se-75) source to the approved contents of the source changer. The applicant performed dose measurements for a Se-75 source in a Model No. 650L package to demonstrate that the dose rates from the Se-75 source are bounded by those from the currently approved 240 Ci Iridium-192 (Ir-192) contents. The staff reviewed the application and performed a verification calculation to compare the dose rates from the 300 Ci Se-75 and the 240 Ci Ir-192 sources.

The measurements for the Se-75 source were performed on an as-manufactured package and compared to the measurements made for the Ir-192 source in a package tested for conditions normal to transport. While a more accurate comparison would be with dose rates on packages that had experienced similar conditions (tested, or as-manufactured), staff finds the comparison acceptable for two reasons. First, a review of the dose measurements of test units made before and after testing indicate that, overall, differences in dose rates on as-manufactured packages and packages tested for conditions normal to transport are small. Second, the margin between the measured dose rates and the regulatory limits is large. Additionally, staff's independent calculation showed that the dose rates from the Ir-192 source bound the dose rates from the proposed Se-75 source. Therefore, based on a review of the applicant's measurements and staff's independent calculation, staff finds that the dose rates from the proposed Se-75 contents are bounded by the dose rates from the approved Ir-192 contents and thus meet the regulatory dose rate limits of 10 CFR Part 71.

Therefore, based on the review of the statements and representations made in the application, the staff finds that the package design with the proposed contents meets the shielding requirements of 10 CFR Part 71.

#### **Operating Procedures and Acceptance Tests and Maintenance Program Evaluation - SAR, Chapters 7 and 8**

Chapter 7 and Chapter 8 of the SAR were updated to conform to the guidance in Regulatory Guide 7.9. In addition, these chapters were updated to include the addition of Selenium-75 as new contents.

Chapter 7 of the SAR describes by what means the package is loaded, closed, and prepared for transport. Chapter 7 was revised to include the isotope Se-75. QSA added clarification to several sections of the Operating Procedures. These included added clarification for surveys required for preparation for transport, loading of contents, and preparation of empty packages. Chapter 8 of the SAR describes the acceptance test and maintenance program. QSA updated Chapter 8 to include additional details for visual inspection, structural and pressure tests, and radiation surveys. Staff has reviewed Chapter 7 and Chapter 8 of the SAR in accordance with the regulations of 10 CFR Part 71 and concludes that these changes do not adversely affect radiation safety and the package shielding design and that the testing and procedures meet the requirements of 10 CFR Part 71.

## **CHANGES TO THE CERTIFICATE OF COMPLIANCE**

The following changes are included in Revision 5 to CoC No. 9269.

- Condition No. 3(a) was updated with the new company name of QSA Global, Inc.
- Condition No. 5(a)(2) was updated to include Selenium-75 in the package description.
- Condition No. 5(a)(3) was updated to reference Revision H to drawing R65006.
- Condition No. 5(b)(1) was updated to include the Selenium-75 in the package contents.
- Condition No. 5(b)(2) was updated to include the limit of the maximum quantity of material per package for Selenium-75 and its associated reference for calculating the output requirement.
- Condition No. 10 was added to allow use of Revision 4 for a period of one year.
- The March 1, June 6, June 30, and July 14, 2006, submittals were included in the References section.

## **CONCLUSION**

Based on the statements and representation in the application, the staff concludes that the Model No. 650L meets the requirements of the revised 10 CFR Part 71 and can be designated with "-96" in the identification number. Additionally, the requirements have been addressed for the addition of Se-75 to the package contents.

Issued with Certificate of Compliance No. 9269, Revision No. 5  
on August 3, 2006.